

# Berkeley Water Center Enabling Eco-Science Data Analysis

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Goode, Keith Jackson, and Robin Weber

# Data Availability is Often no Longer the Problem

- Broad range of agencies make data available via the web
  - Wide diversity of interfaces
  - Different data formats
  - Different representations
  - Interfaces difficult to navigate
  - Different periods of record
- Gaps in data and diverse periods of record
- Research groups typically use flat files on an internal server
- Data continually updated

# Developing Common Eco-Science Data Interfaces

- Graphical data selection tool
- On-line analytical processing (OLAP) data cubes provide browsing access
- Reports provide web pages describing the data
- Collaboration tools facilitate communication between data providers and data users as well as between data users

Forest Culture

Forest Information

Home | DataSet Information | Flux | User Support | Data Download | Data Downloading | Site Data Access

View All Site Content | Documents | Links | Documents | Sites | People and Groups | Reprofile Site

This Dataset Information | Flux | User Support | Data Download | Data Downloading | Site Data Access

Forest Culture > Dataset Information

Information About Participating Sites and Available Data at Those Sites

The links below provide an overview of the dataset and the sites that contributed data to the dataset. They also provide some specific information about the datum types and sites in this dataset as well as data availability information.

Maps and Imagery

- Map of site locations
- Site imagery

Site Ancillary and Average Values

- Summary of key site average meteorological values
- General Site Ancillary data
  - Koeppen-Geiger Climate Classification Map
  - ISBP vegetation types table
  - Full Site Ancillary data - access restricted to collaboration members
- List of Sites by Curator (the curator is the person responsible for collecting data from and interacting with the site (s))
- List of Site Curators and Contacts by Country
- List of Sites by network

Data Availability Information

- Site List of Years with data in the Dataset
- Site List of Core Variables Present for Each Year

Data Explanations (including units information)

- List of variables in the 1/2 hourly files
- List of variables in the daily files
- Datatypes reporting and explanation information
- Datatypes/offset/Datatypes/offset information

Dataset Information | Flux | User Support | Data Download | Data Downloading | Site Data Access

Dataset > Flux > Dataset Information > Dataset Data Lib > CumulativeValuesByVegType

Excel Web Access - CumulativeValuesByVegType

Download Excel

Working Group: All Current Fluxnet Data

			Precep	Rd	R2	R2 m 2 p 1	SWC	Ts	Ts
			m m p 1	m m p 1	m m p 1	m m p 1	m m p 1	m m p 1	m m p 1
1	AT-New	Austria - Newell/Slab Valley	GDA	1,284,339	4,264	1,367	31,673	6,766	4,892
2	AT-New	Austria - Newell/Slab Valley	GDA	1,284,339	4,264	1,367	31,673	6,766	4,892
3	AT-New	Austria - Tumbleria	ERF	1,232,300	5,808	2,824	9,242	10,418	10,418
4	AT-New	Austria - Tumbleria Creek	TRD	762,300	1,669	3,173	1,241	12,493	4,428
5	BE-Bra	Belgium - Brezelshe (De Bie)	HRF	822,247	3,844	1,803	11,358	10,317	10,317
6	BE-Bra	Belgium - Brezelshe (De Bie)	HRF	1,634,486	3,183	1,561	54,216	8,664	8,415
7	BE-Lan	Belgium - Lanse	CHD	453,780	3,660	1,800	28,119	13,869	11,948
8	BE-Lan	Belgium - Lanse	CHD	821,620	3,447	1,661	19,205	8,217	8,217
9	BR-Bra	Brazil - Estacao Biologica	TRD	1,003,693	5,380	3,191	44,461	26,470	23,025
10	BR-Cas	Brazil - Caxoeiro Preto (Pantanal)	TRD	1,450,339	5,510	4,800	38,164	26,163	25,121
11	BR-Bra	Brazil - Estacao Biologica	TRD	1,003,693	5,380	3,191	44,461	26,470	23,025
12	BR-Bra	Brazil - Estacao Biologica	TRD	1,003,693	5,380	3,191	44,461	26,470	23,025
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99	BR-Bra	Brazil - Estacao Biologica	TRD	1,003,693	5,380	3,191	44,461	26,470	23,025
100	BR-Bra	Brazil - Estacao Biologica	TRD	1,003,693	5,380	3,191	44,461	26,470	23,025

## LAYERS

- Watershed    
- Ecoregion    
- Geology    

## SEARCH

### DATA

- Geographic area   
- Time Frame  
- Keyword

discharge



SUBMIT

RESET



**Site Name :** PETALUMA R A COPLAND PUMPING  
STATION A PETALUMA

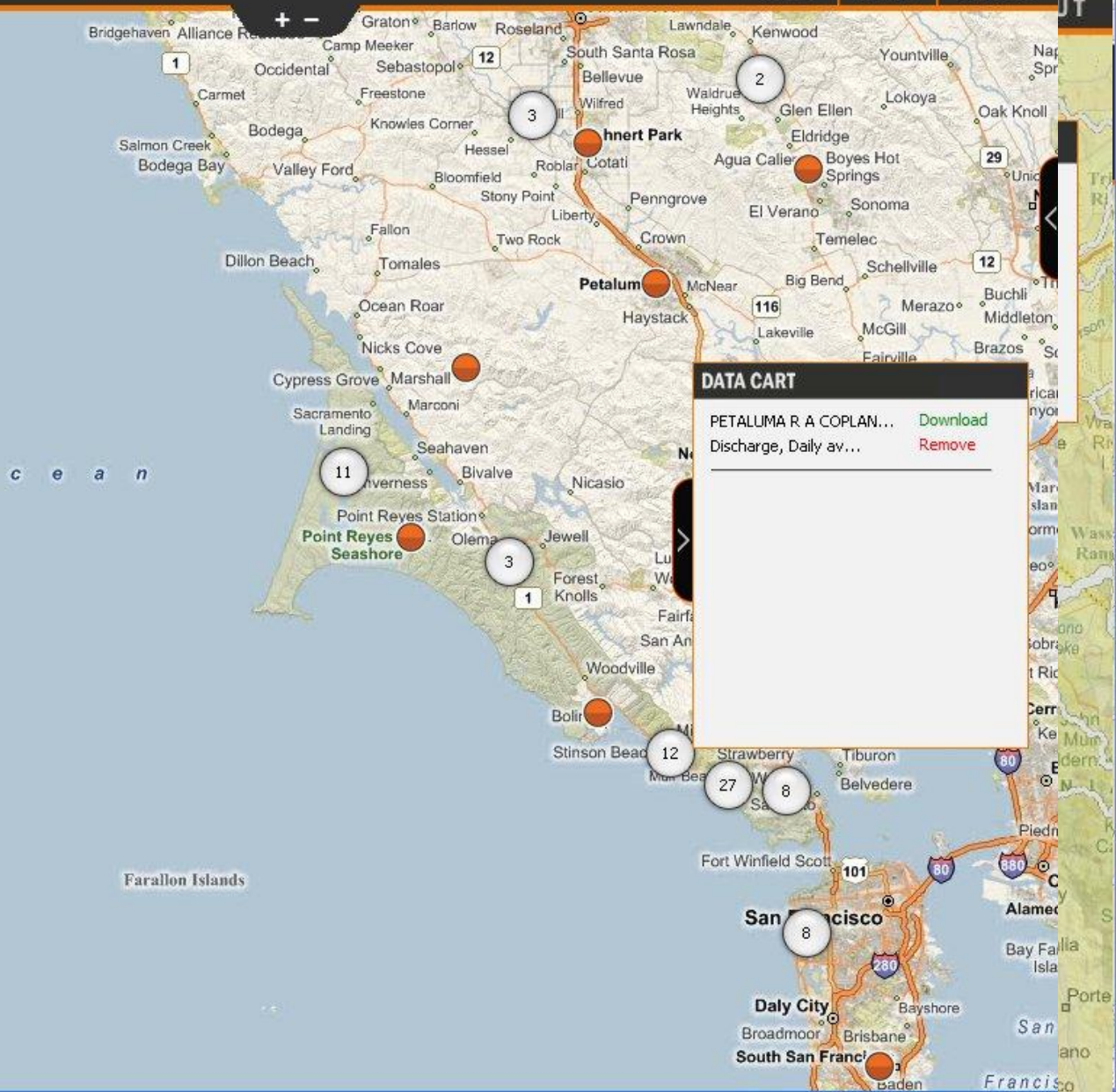
**Operated by :** National Water Information System

### Available Measurements :

Discharge, Daily average  

### Relevant Measurements :

Discharge, Daily average  



## DATA CART

PETALUMA R A COPLAND PUMPING STATION A PETALUMA  
Discharge, Daily av... [Download](#) [Remove](#)

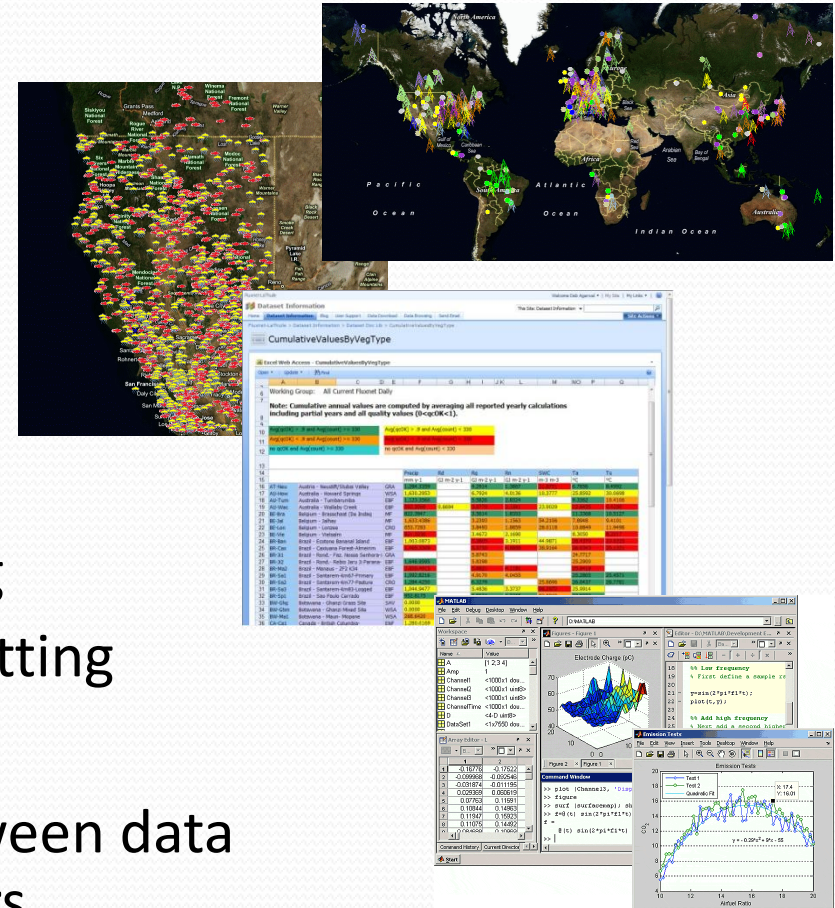
# Behind SciScope

- Contains information on where, when (time frame) and what is being measured for about 1.65 million sites in the US
- Scraped/crawled on a regular basis
- SciScope currently hosts only metadata.
- Data are requested on the fly from the original publisher using web service wrappers written specifically for each data source.
- Data are reformatted to provide a unified view over the repositories.



# Interaction and Visualization of Data

- Mashup maps
  - locate sensors
- Data summary reports
  - Data browsing
  - Data selection
- OLAP data cube interfaces
  - Matlab – analysis and plotting
  - Excel – data browsing and plotting
- Collaboration capabilities
  - Improve communication between data producers and data consumers



# Pivot Tables

Excel PivotTable interface showing a PivotTable with the following settings:

- Exdatumtype:** (none)
- Repeat:** 0
- Datumtype:** Rg
- Value units:** (Multiple Items)
- Dataset:** June download from ORNL web site

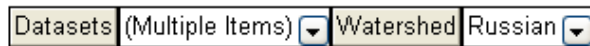
The PivotTable is set to show **MaximumValue** for the **Site** and **Latitude** fields. The data is organized by **Yy** (Year) and **Yymm** (Month).

Yy	Yymm	Yymdd	Site	Latitude
2001	2001-09	2001-09-01	Brazil -- Tapajos (Santarem,Km83), Logged Forest	Canada -- BOREAS NSA - 1930 burn site
		2001-09-02		Canada -- BOF
		2001-09-03		
		2001-09-04		
		2001-09-05		414.6756592
		2001-09-06		557.3077393
		2001-09-07		
		2001-09-08		
		2001-09-09		
		2001-09-10		
		2001-09-11		
		2001-09-12		
		2001-09-13		
		2001-09-14		
		2001-09-15		
		2001-09-16		
		2001-09-17		
		2001-09-18		
		2001-09-19		
		2001-09-20		
		2001-09-21		
		2001-09-22		
		2001-09-23		

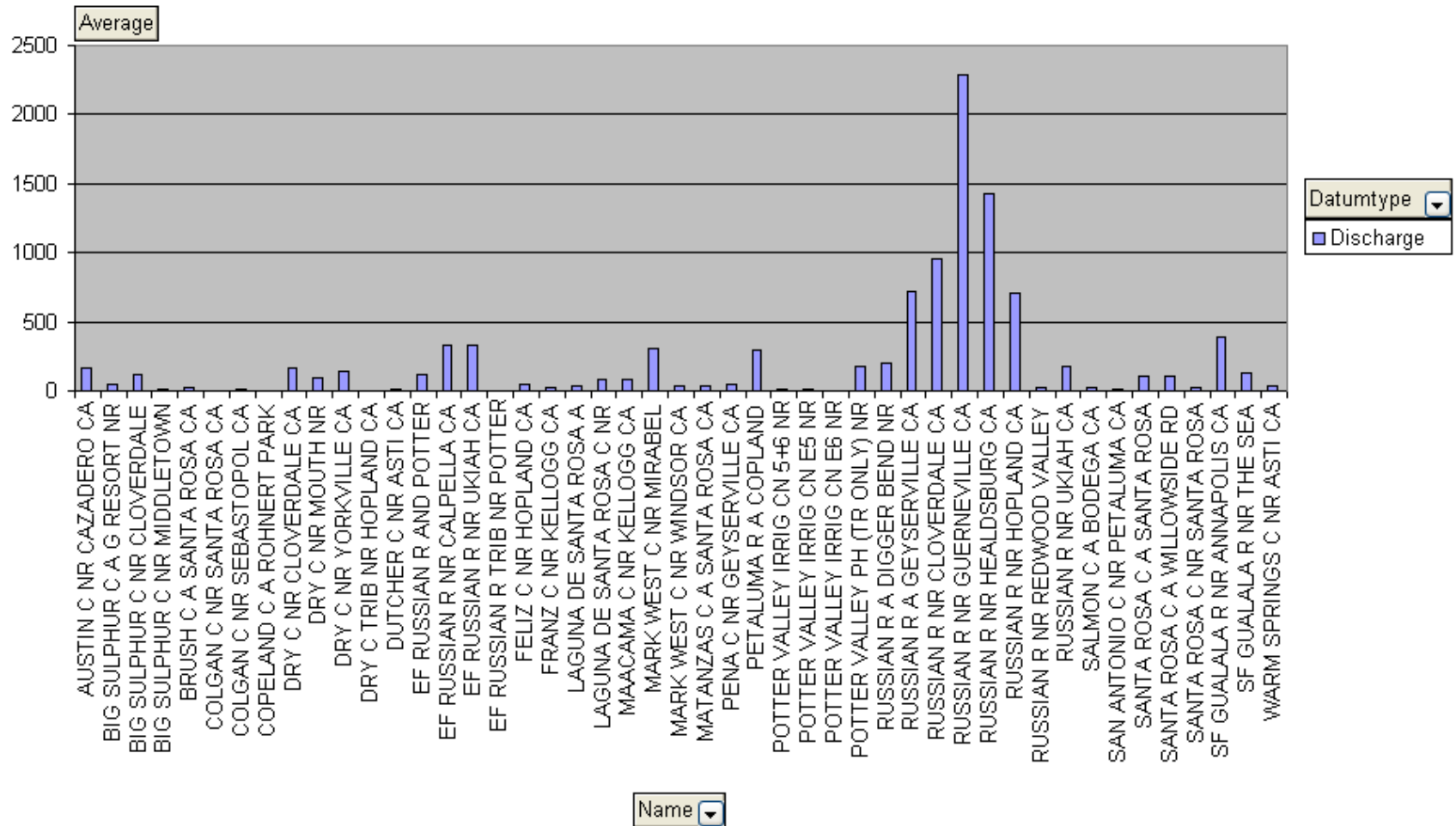
The PivotTable Field List on the right shows the following fields:

- Dataset
- Datumtype
- Name
- Exdatumtype
- Value units
- Repeat
- Ecosystem
- Latitude
- Site
- Day of Year
- Hour of Day

# Pivot Charts



Discharge

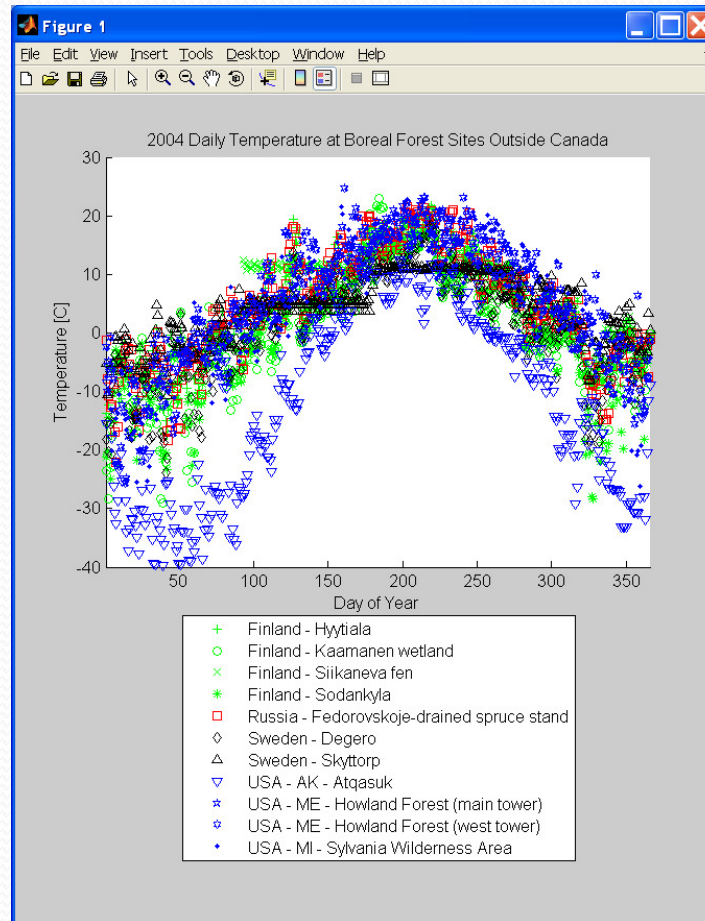




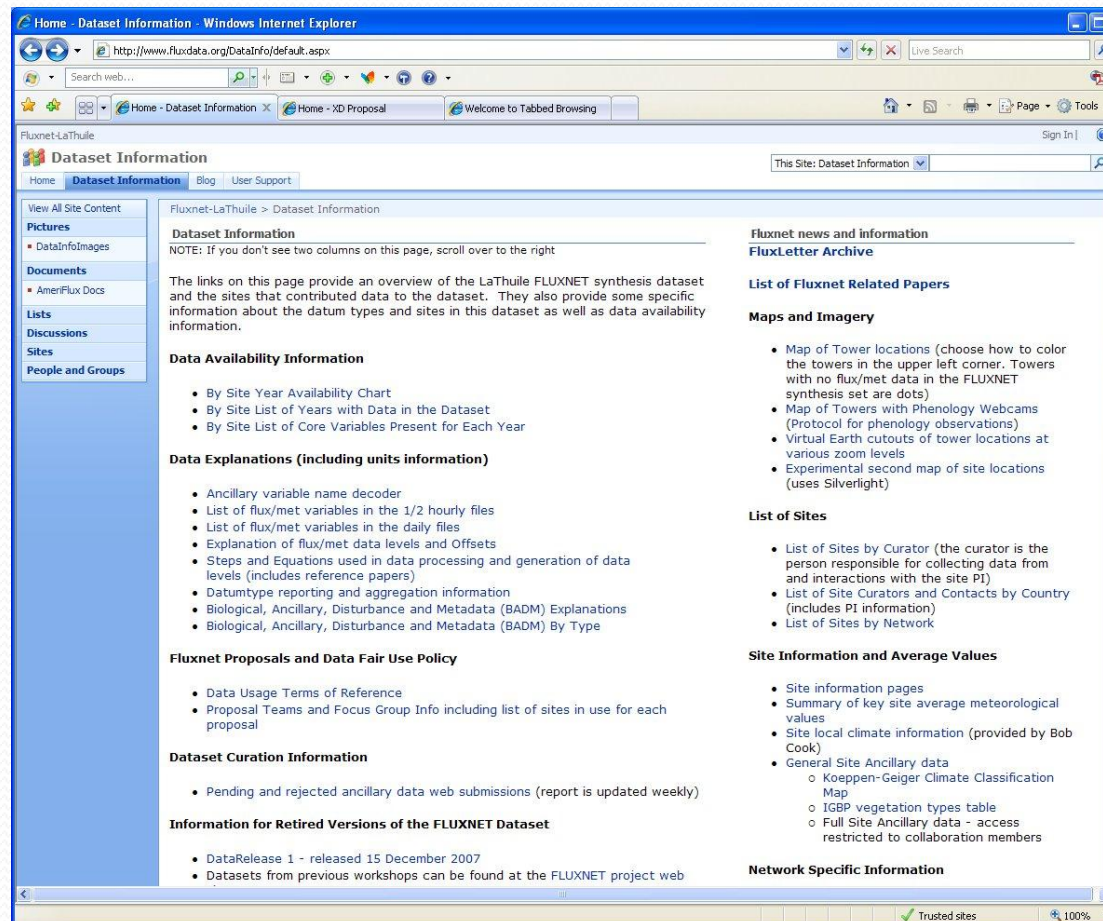
# MatLab Interface

[illegible]

# Plotting Results



# SharePoint Portal



# SharePoint Hosted Reports

Dataset Doc Lib - CumulativeValuesByVegType - Windows Internet Explorer

http://www.fluxdata.org/DataInfo/Dataset%20Doc%20Lib/CumulativeValuesByVegType.aspx

Search web...

Dataset Doc Lib - Cumula... X Home - XD Proposal Welcome to Tabbed Browsing

Fluxnet-LaThuile Sign In

Dataset Information

Home Dataset Information Blog User Support

Fluxnet-LaThuile > Dataset Information > Dataset Doc Lib > CumulativeValuesByVegType

CumulativeValuesByVegType

Excel Web Access - CumulativeValuesByVegType

Open Update Find

A B C D E F G H I J K L M N

1 Cumulative Annual Variable Values by Site

2 Download Excel

3 Generated: 9/2/2008 5:30:13 PM

4

5 Working Group: All Current Fluxnet Daily

6

7 Data Release 2+BADM (preliminary)

8 Data as of 2008-02-16

9 Note: Cumulative annual values are computed by averaging all reported yearly calculations including partial years and all quality values (0 < qcOK < 1).

10

11 Avg(qcOK) > .9 and Avg(count) >= 330 Avg(qcOK) > .9 and Avg(count) < 330

12 Avg(qcOK) < .9 and Avg(count) >= 330 Avg(qcOK) < .9 and Avg(count) < 330

13 no qcOK and Avg(count) >= 330 no qcOK and Avg(count) < 330

14

15

16

17

			Precip mm y-1	Rd GJ m-2 y-1	Rq GJ m-2 y-1	Rn GJ m-2 y-1	SWC m-3 m-3	Ta °C	Ts °C
18	AT-Neu	Austria - Neustift/Stubai Valley	GRA	1,284.3359	4.2914	1.3867	31.8751	6.7856	8.4992
19	AU-Fog	Australia - Fogg Dam	SAV	1,463.1003	7.3308	4.5664	96.0497	25.6354	25.3748
20	AU-How	Australia - Howard Springs	WSA	1,630.2953	6.7924	4.0136	10.3772	25.8592	30.0698
21	AU-Tum	Australia - Tumbarumba	EBF	1,123.3560	5.3826	2.8324		9.3362	10.4106
22	AU-Wac	Australia - Wallaby Creek	EBF	870.0000	0.6696	1.4294	25.8897	14.4618	9.0123
23	BE-Bra	Belgium - Bresschaat (De Inslag Forest)	MF	822.3947		3.5614	1.8303	11.3368	10.5127
24	BE-Jal	Belgium - Jalhay	MF	1,633.4386	3.2393	1.1563	54.2106	7.8948	9.4101
25	BE-Lon	Belgium - Lonze	CRO	653.7283	3.8493	1.8859	28.0118	10.8849	11.9498
26	BE-Vie	Belgium - Vielsalm	MF	821.0230	3.4672	2.1690		8.3050	8.2217
27	BR-Ban	Brazil - Ecotone Bananal Island	EBF	1,003.0873	2.2000	3.1911	44.9871	26.1478	23.0000
28	BR-Cax	Brazil - Caxiuaa Forest-Almeirim	EBF	1,465.3309	5.5755	4.8808	10.5144	26.0343	25.1231
29	BR-Jil	Brazil - Rond.-Faz. Nossa Senhora-i	GRA		5.8743			24.7717	

Trusted sites 100%

# Acknowledgements

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Marty Humphrey  
Norm Beekwilder

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Bora Beran  
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Savas Parastidis  
Andy Sterland  
Nolan Li (student)  
Tony Hey  
Dan Fay  
Jing De Jong-Chen  
Stuart Ozer  
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Jim Gray

Ameriflux Collaboration

Beverly Law  
Tara Stiefl (student)  
Gretchen Miller (student)  
Mattias Falk  
Tom Boden

Fluxnet Collaboration

Dennis Baldocchi  
Rodrigo Vargas (postdoc)  
Dario Papale  
Markus Reichstein  
Bob Cook  
Dorothea Frank  
Youngryel Ryu (postdoc)

National Marine Fisheries Service  
Sonoma County Water Agency  
Sonoma Ecology Center  
Bureau of Reclamation

Project URLs:

<http://bwc.berkeley.edu/DataServerdefault.htm>  
and <http://www.fluxdata.org>